IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A modular computing system comprising :

a set of functionally independent processing nodes having one or more local processors and local memory, wherein each processing node includes a common communication interface for communicating with other nodes within the system via a messages conforming to a packetized network protocol, and wherein the common communication interface within each node connects the local memory to the local processors, provides at least one port for interfacing with the routing modules and at least one port for communicating with an input/output (I/O) subsystem;

a system control hierarchy, wherein the system control hierarchy includes,

a level one controller within each processing node,

a level two controller providing rack-wide control, and

a level three controller providing system-wide control; and

one or more routing modules communicatively coupling the processing nodes via their respective common communication interface.

2. (Original) The system of claim 1, wherein the nodes operate in a global shared-memory address space.

3. (Cancelled)

4. (Original) The system of claim 1, wherein the common communication interface of each node may be directly coupled together, thereby eliminating the routing module.

5. (Cancelled)

6. (Original) The system of claim 5, wherein the level one controller within each node controls direct low-level communications within the node.

7. (Cancelled)

8. (Currently Amended) The system of claim ~~5~~1, wherein the level three controller is a standalone workstation.

9. (Original) The system of claim 1, wherein the nodes are communicatively coupled to the routing modules via a high-speed Universal Serial Bus.

10. (Original) The system of claim 1, wherein each common communication interface includes:

a processor interface for interfacing to one or more processing nodes.

a memory interface for interfacing to local memory as a portion of the global memory and for maintaining cache coherency across the computing system.

an I/O interface for communicating with an I/O subsystem.

11. (Original) The system of claim 1, wherein the common communication interface includes a plurality of interface control units.

12. (Original) The system of claim 11, wherein the common communication interface includes a central crossbar communicatively coupling each interface control unit for the exchange of data between the external interfaces at high data rates.

13. (Original) The system of claim 12, wherein each interface control unit within common communication interface communicates by sending messages through the crossbar.

14. (Currently Amended) The system of claim 12, wherein the message protocol is a synchronous message protocol comprising requests and replies.

15. (Original) The system of claim 12, wherein the crossbar coverts the messages to an internal message format.

16. (Original) The system of claim 12, wherein crossbar communicates the messages across two internal two virtual channels by multiplexing the messages across physical channels connecting each unit.

17. (Currently Amended) A processing node for a modular computing system comprising :

one or more local processors;

local memory;

a common communication interface coupled to the local processors and the local memory, wherein the common communication interface includes:

a processor interface for communicating with one or more external processing nodes;

a memory interface by which the local processors and the external processor nodes communicating with the local memory;

a routing interface for communicating with an external routing module; and

an I/O interface for communicating with an I/O external subsystem; and

a level-one controller to provide communications between the one or more local processors and the local memory, wherein the level-one controller can act as a master controller to other components of the modular computing system, and wherein the common communication interface of the node may be directly coupled to a common communication interface of another such node via the I/O interface.

18. (Original) The processing node of claim 17, wherein the nodes operate in a global shared-memory address space.

19. (Cancelled)

20. (Currently Amended) The processing node of claim ~~5~~17 and further including a system controller for directing low-level communications within the node.

21. (Original) The processing node of claim 17, wherein the routing interface includes a high-speed Universal Serial Bus.

22. (Original) The processing node of claim 17, wherein the common communication interface includes a plurality of interface control units.

23. (Original) The processing node of claim 22, wherein the common communication interface includes a central crossbar communicatively coupling each interface control unit for the exchange of data between the external interfaces at high data rates.

24. (Original) The processing node of claim 22, wherein each interface control unit within common communication interface communicates by sending messages through the crossbar.

25. (Original) The processing node of claim 17, wherein the message protocol is a synchronous message protocol comprising requests and replies.

26. (Original) The processing node of claim 22, wherein the crossbar coverts the messages to an internal message format.

27. (Original) The system of claim 22, wherein crossbar communicates the messages across two internal two virtual channels by multiplexing the messages across physical channels connecting each unit.

28. (Currently Amended) A modular computing system comprising :

a set of functionally independent processing nodes operating in a global, shared address space, wherein each node has one or more local processors and local memory, wherein each

processing node includes a common communication interface for communicating with other modules within the system via a message protocol, and further wherein the common communication interface provides a single high-speed communications center within each node to operatively couple the node to one or more external processing nodes, an external routing module, or an input/output (I/O) module; and

a system control hierarchy, wherein the system control hierarchy includes,

a level one controller within each processing node,

a level two controller providing rack-wide control, and

a level three controller providing system-wide control.

29. (Original) The system of claim 28, wherein the computing system may include an arbitrary combination of processing nodes and other modules such that there need not be a fixed relation between the number of processing nodes and the other modules.

30. (Cancelled)

31. (Cancelled)

32. (New) A modular computing system comprising :

a fist set of processing nodes, wherein each processing node has one or more processors and memory, and wherein each processing node includes a common communication interface for communicating with other processing nodes within the set, and wherein each processing node includes a first controller for controlling power, initiating reset, and storing configuration information;

a second set of one or more routing modules to communicatively couple the processing nodes through their respective common communication interfaces;

a power module to provide power to the computer system, wherein the power module includes one or more power supplies, and wherein the number of power supplies increases with the number of processing nodes and routing modules;

a third set of one or more Input/Output (I/O) modules to provide I/O functionality for the first set of processing nodes, wherein the I/O modules provide boot requirements, include PCI slots, or include XIO slots; and

a second controller to control communications between the processing nodes, the routing modules, the I/O modules, and the power module.

33. (New) The modular computer system of claim 1, wherein the common communication interface includes,

a processor node interface for communicating with ones of the first set of processing nodes;

a memory interface to enable processors of the processing nodes to communicate with memory of the processing nodes;

a routing interface for communicating with ones of the second set of external routing modules;

an I/O interface for communicating with ones of the third set of I/O modules;

a network interface for communicating with ones of the first set of processing nodes over a communications network; and

a crossbar for exchanging data across the memory interface, the routing interface, the I/O interface, and the network interface.

3. (New) The modular computer system of claim 1, wherein each of the power supplies are to receive a single-phase AC input and provide an output of 950 watts at 48 VDC.

34. (New) The modular computer system of claim 1, wherein the first controller provides diagnostics and scanned interfaces to a user.

35. (New) A system comprising:

a rack;

an first set of one or more processing modules to mount to the rack, wherein each processing module includes a plurality of processors and a memory;

a second set of router modules to mount in the rack, wherein each router module is adapted to connect to four processor modules of the first set, wherein each router module is adapted to connect to router modules of the second set, wherein each router is to route messages between processors the processing modules, and wherein the messages conform to a packetized network protocol ;

a third set of Input/Output (I/O) modules connected to the processing modules, wherein the I/O modules are to provide I/O functionality to the processing modules, and wherein the I/O modules are to receive add-in cards;

a power module mounted on the rack, wherein the power module is to provide power to the processing modules, the router modules, and the I/O modules.

36. (New) The system of claim 5, wherein each processing node includes a common communication interface for communicating with other processing nodes.

37. (New) The system of claim 5, wherein each processing node includes a controller that provides diagnostics and scanned interfaces to a user.